Monitoring Plan for Beaverhead West Watershed

Introduction

The purpose of this resource monitoring plan is to measure the effectiveness of management changes, structural projects and vegetative treatments in meeting the goals and objectives developed for the Beaverhead West Watershed (BWW). This plan has been designed to measure progress towards the realization of site specific objectives developed through an interdisciplinary approach to mitigate resource (land health) concerns identified during the BWW Assessment process.

This plan will identify when, where and how new studies will be conducted, as well as the types of data that will be collected, how the data will be evaluated, and who will participate in the process. All monitoring methodologies are accepted BLM monitoring methodologies and are described in various BLM or Interagency Handbooks. In addition to this plan, all existing monitoring studies that are needed to measure progress towards goals and objectives will continue to be read on the same time schedule as new studies.

Site Specific Objectives

There were two driving issues and three additional resource concerns identified during the BWW Assessment and through public scoping. Other monitoring activities will include critical elements that may be affected by the proposed action. Site specific objectives have been developed for each issue and most resource concerns and/or critical elements analyzed in the BWW Environmental Assessment (EA). The amount of change desired for each of the objectives will be determined once additional baseline data is gathered during the next two field seasons. The goal is to make measurable progress towards site specific objectives by 2017.

Issue #1 – Upland Health, Sagebrush Steppe Habitat and Associated Species

The objectives for upland health, sagebrush steppe habitat and associated species are:

- Increase cover and frequency of native perennial cool-season herbaceous species where concerns were documented.
- Prevent spread of noxious and invasive species into and within the watershed and reduce or eradicate existing infestations.
- Maintain residual herbaceous cover for ground nesting birds, specifically sage grouse.
- Manage sagebrush habitats so that 70% or more of potential big sagebrush communities provide the vegetative composition and structure to sustain sage grouse populations and other sagebrush obligate species such as pronghorn antelope and pygmy rabbits.
- Maintain 15-25% sagebrush canopy cover and herbaceous cover conducive to nesting and brood-rearing success surrounding leks, as applicable within site potential.
- Restore or maintain grassland and shrubland habitat types affected by conifer expansion.
- Where possible, salvage dead/dying forest stands from epidemic insect activity and treat remaining stands to increase their resilience to insect activity. Utilize resulting forest products where feasible.

Monitoring Activities to measure progress towards meeting Upland Health, Sagebrush Steppe Habitat and Associated Species objectives:

- Continue early detection, monitoring, and evaluation of noxious weeds treatments in cooperation Beaverhead and Madison Counties and other partners.

- Continue existing upland trend studies (Daubenmires) within the BWW, as applicable.
- Maintain winter use big game utilization studies to continue monitoring the habitat quality and determine if management of these areas is providing the seasonal habitat requirements of existing populations (or population objectives) of big game.

Table 1. Site Specific Upland Objectives

Allotment Name	Objective	Monitoring Methodologies
Scudder Creek AMP Frying Pan • Center Antelope Butte Rattlesnake Beaverhead Rock Anderson Field • Middle Chandler PHW • North Seeding Rocky Hills • Browns Spring • Windmill East Argenta Flats	Increase frequency and cover of cool season perennial bunchgrasses to protect soil, allow for more efficient precipitation infiltration, provide cover and forage for wildlife species, and forage for authorized livestock. Reduce spotted knapweed in Beaverhead Rock.	- Daubenmire; - Quadrat (nested) Frequency - and/or photo points

Table 2. Site Specific Objectives for Sagebrush Habitat

Allotment Name	Objective	Monitoring Methodologies
Rocky Hills PHW Scudder Cr AMP Anderson field Red Mine	Delineate seasonal habitats of sage grouse and habitats of pygmy rabbit. Maintain nesting canopy cover of 15–25% sagebrush on the majority of the area within two miles of leks. Maintain adequate herbaceous understory on the majority of the area within two miles of leks during nesting /early brood rearing (typically April through mid-June). The herbaceous understory objective is an average of 6 to 7 inches within site potential. Maintain brood rearing canopy cover of 15–25% sagebrush near riparian areas or wet meadows while maintaining available forbs in the wet meadows. Maintain or increase composition of highly nutritious forbs (ie composites and legumes) in nesting/early brood rearing habitat.	Habitat Characterization Monitoring; This methodology may combine telemetry study* (radio collar and tracking of hens to identify nesting and brood-rearing habitats) with Line Intercept and Daubenmire plots to measure canopy cover of sagebrush and herbaceous understory. Forage utilization and herbaceous understory cover will be measured annually within time constraints of staff.

Monitoring Activities to measure progress towards meeting Forest Health and Fuels objectives:

Pre- Implementation:

- Complete Forest Vegetation Information System (FORVIS) walkthrough survey to classify the existing vegetation type within a representative sample of each stand type. Walkthrough survey data includes canopy species composition and density, understory vegetation, fuel loading, and density and size class of snags and down wood.
- Establish GPS photo points within a representative sample of stand types, and document general stand conditions with photos. Documentation will reflect the particular objectives of individual units.
- Establish GPS photo point(s) showing approximate percent cover habitat type plants and any occurrence of insect/disease at the landscape-scale
- Prescribed Burn Units: Gather fuels data and establish vegetation transects and/or photo point(s) on representative sites. Photographic documentation should include pre and post-treatment photos from a designated point.
- If prescribed burns are conducted after May 15, migratory bird surveys will be completed prior to burning activities.

During Prescribed Burn Treatments:

- Fire behavior, fire weather, and smoke dispersion will be observed and documented throughout the ignition portion of each burn to make sure that these elements are within the prescription defined in the burn plan.

Post Implementation:

- Within two years after implementation on a given unit, re-visit stand to obtain the same data measurements described above and evaluate if the stand objectives were reached.
- Prescribed Burn Units:
    - Right after treatment: Photo points and/or measurements along each pre-treatment transect to determine if treatment objectives have been attained.
    - One to four years after treatment: Re-measure transects and/or take additional photos at the photo points to show vegetative response to the treatment and progress towards meeting objectives. Changes in use by big game, specifically elk, within the treatment areas may be measured by conducting pellet group transects prior to treatment and then annually for up to five years following treatment.

Issues #2 – Riparian, Wetland and Aquatic Habitat and Associated Species

The objectives for riparian, wetland and aquatic habitat and associated species are:

- Restore deciduous woody habitat types (aspen, willow) in riparian areas that have been invaded by coniferous trees (e.g., Gallagher Creek and Grasshopper Creek tributaries).
- Increase deep-rooted riparian vegetation (sedges, willows) where decreased composition was documented.
- Restore stream dimension, pattern, and profile to the natural range of variation where concerns were documented.

- Restore, maintain or enhance native vegetation and hydrology to springs, seeps and wet meadows where concerns were documented.
- Reduce sediment loads where uses on public lands are causing increased sediment (e.g., cattle loitering, road maintenance, etc).
- Maintain or enhance habitat for cold water fisheries in occupied streams within the watershed.
- Maintain or improve conditions in riparian/wetland habitats that are in PFC.
- Prevent spread of noxious and invasive species into and within the watershed and reduce or eradicate existing infestations.

Monitoring Activities to measure progress towards meeting Riparian, Wetland and Aquatic Habitat and Associated Species objectives:

- Continue early detection, monitoring, and evaluation of noxious weeds treatments in cooperation Beaverhead and Madison Counties and other partners.
- Continue monitoring existing riparian studies as applicable.
- Photos will be taken at each spring prior to and after development/redevelopment.

Table 3. Site specific Riparian and Wetland Habitat and Associated Species Monitoring Objectives

Allotment Name	Stream and Stream Reach	Objective	Monitoring Methodology
Gallagher	Bill Hill Creek 14 Bill Hill trib. 35 Bill Hill trib. 78 Bill Hill trib. 79 Gallagher trib. 75 Gallagher trib. 76	Increase sedge and where applicable, willow and aspen composition and decrease invasive species along the greenline. Improve streambank stability and channel morphology by reducing trailing impacts.	Greenline transect and/or Photo point(s)
	Gallagher Creek 25 Gallagher Creek 26	Increase willow, aspen and cottonwood and decrease juniper and invasive species within the riparian zone.	Belt transect and photo point(s)
Flynn Draw	Sheep Creek trib. 6 Sheep Creek trib. 30	Increase sedge along the greenline Improve streambank stability and channel morphology by reducing trailing impacts.	Greenline transect Cumulative width/depth Photo point(s)
Farlin Creek	Scudder Creek 33	Increase sedge along the greenline Improve streambank stability and channel morphology by reducing trailing impacts.	Greenline transect and/or Photo point(s)
	Farlin Creek 19 & 20	Improve streambank stability	Greenline transect and/or Photo point(s), Ocular sediment input monitoring

Appendix B

Allotment Name	Stream and Stream Reach	Objective	Monitoring Methodology
Red Mine	Taylor Creek 43 Taylor Creek 44	Improve streambank stability and channel morphology by reducing trailing impacts. Increase sedges and willows and decrease invasive species along the greenline	Greenline transect and/or Photo point(s)
	Grasshopper trib. 56	Improve streambank stability and channel morphology by reducing trampling impacts. Reduce pugging within the wetland area. Increase sedges along the greenline and within the wetland area.	Greenline or Belt transect Cumulative width/depth ratio (optional) Photo point(s)
Holland Carroll Isolated	Taylor Creek 89	Improve streambank stability and channel morphology by reducing trailing impacts. Increase willows and aspen within the riparian zone.	Photo points(s)
Rocky Hills	Cedar Creek 96	Improve streambank stability and channel morphology by reducing trailing impacts. Increase sedge and willows and decrease invasive species along the greenline.	Greenline transects and/or Photo points
PHW	Watson Creek 34 Watson Creek SF 38 Watson Creek SF 40 Watson Creek trib. 61	Improve streambank stability and channel morphology by reducing trampling impacts. Increase sedges along the greenline. Increase aspen and willows along the greenline (Reaches 38 and 40)	Greenline transects Cumulative width/depth transects (Reach 34 and/or 40) Photo point(s)
Bell Ranch	Albers Spring 52	Increase riparian vegetation and reduce trailing impacts to spring source	Photo point(s)
Eli Spring (unallotted)	Eli Spring 70	Increase riparian/wetland vegetation including rare plants Reduce hummocking and decrease bareground by eliminating livestock impacts	Macro-plot or Belt transect Photo point(s)

Resource Concern # 1: Special Status Species
The objectives for Special Status Species are:

- Maintain or enhance habitat for sensitive plant species while providing ample opportunity for reproduction and seedling establishment.
- Maintain or enhance habitat for sensitive wildlife species while providing ample opportunity for reproduction and recruitment.
- Maintain or enhance habitat for WCT on Farlin and Taylor Creeks, and other suitable habitat within the watershed.
- Augment WCT populations by reintroducing WCT into suitable habitat within the watershed (e.g. BLM reaches of Taylor Creek)
- Protect the population of WCT in Farlin Creek from hybridization and competition from non native salmonids.
- Enhance native fluvial arctic grayling habitat on the Big Hole River.

Monitoring Activities to measure progress towards meeting Special Status Species objectives:

- Continue to complete sensitive plant clearances prior to any surface disturbing activities and in areas planned for aerial treatment of weeds.
- Monitor species activity in cooperation with MT FWP, and ensure that habitat requirements are met.
- Continue monitoring westslope cutthroat trout population and distribution in coordination with FWP.
- Conduct habitat surveys on Taylor Creek to determine feasibility to reintroduce WCT.
- Work with MT FWP to conduct periodic population monitoring in Farlin Creek
- Continue to provide funding and assistance to conduct fluvial arctic grayling habitat and population monitoring in the Big Hole River.

Sage grouse and pygmy rabbit habitat characterization monitoring is identified in Table 2 above. Sage brush habitat needs for both species are similar. Monitoring and inventory data collected for sage grouse has documented pygmy rabbits utilizing the same habitat in the DFO. Therefore, data collected for sage grouse can also be extrapolated for pygmy rabbits.

Monitor ferruginous hawk nests within the watershed to document occupancy and productivity. Sampling should occur on a 5-year basis following inventories in 2005 and 2006.

Table 4. Site Specific Sensitive Plant Species Objectives

Allotment Name	Objective	Monitoring Methodologies
Rocky Hills	Maintain or increase density, frequency and cover of bitterroot milkvetch.	Belt transect and/or Macro-plots Photo point(s)

Resource Concern # 2: Recreational Opportunities and Public Access
The objectives for motorized access are:

- Implement the Dillon RMP Travel Management Plan.
- Maintain motorized wheeled vehicle access to those areas where it already exists, and improve access to public lands where opportunities are currently limited.

- Maintain opportunities for big game hunting, fishing, wildlife viewing, horseback riding, and other backcountry recreation.
- Reduce unauthorized motor vehicle use, especially during the hunting season.

Monitoring will consist of compliance checks to determine if closed roads show signs of use and hunting season compliance visits to monitor and enforce the travel management plan.

Resource Concern # 3: Socioeconomics
The objective for socioeconomics is:

- Continue to contribute to the local economy by providing an opportunity for sustainable uses on public land through livestock grazing, utilization of forest products, and recreational opportunities.

Trends in socioeconomics will not be monitored by the local BLM office.

Critical Element: Area of Critical Environmental Concern
Beaverhead Rock ACEC – applicable special management from the Dillon RMP states:

- Evaluate any other proposals against the need to protect this recognizable landmark along the Lewis and Clark National Historic Trail.

Block Mountain ACEC (Hogback) - applicable special management from the Dillon RMP states:

- Evaluate the density and placement of any facilities or land use authorizations proposed in the area and require measures to protect the integrity of the geologic features.

Monitoring activities within the Beaverhead Rock ACEC will include at least one photo-point. There are existing Daubenmire trend transects and photo plots on the Hogback. No new monitoring activities are planned on the Hogback as a result of the BWW EA.

Critical Element: Wilderness Characteristics
The objectives for wilderness characteristics are:

- Maintain or improve the wilderness characteristics that were present at the time of the wilderness inventory (1979-80)
- Reduce occurrence and impacts of unauthorized motor vehicle use.

Planned monitoring will consist of compliance checks and continuation of existing monitoring. WSA monitoring forms will be completed, and photographic documentation will be used where applicable.

Critical Element: Cultural Resources
The goals and objectives for cultural resources in the watershed are to maintain the integrity of existing cultural resources; mitigate potential adverse impacts of any proposed range or habitat improvement projects through project redesign or abandonment; and to record the presence and location of any previously unreported cultural and paleontological resources on public lands.

A review of previously recorded cultural resources has determined that properties in four allotments have potential to be affected by cattle grazing or trampling. Approximately 30% (n=9) of the 30 previously recorded cultural resources in the study area are eligible or potentially

eligible for the National Register of Historic Places and should be revisited in order to determine if adverse impacts associated with grazing management are occurring.

Types of Data Collected

Most established permanent vegetative and physical trend transects in the BWW were read and data was updated during 2006 and 2007. However, to adequately measure progress towards site specific objectives, additional studies will be established in key areas during 2008 and/or 2009. Baseline data will be gathered during or prior to 2009, as necessary to adequately measure progress towards meeting objectives. The baseline data will be considered the starting point from which to measure progress towards meeting objectives or effectiveness of management changes. Monitoring Methodology descriptions are available at the Dillon Field Office.

Key areas are defined as relatively small areas that reflect or have the capability to reflect the effectiveness of management of the resources of a larger area. Depending on management objectives, a key area may be a representative sample of a large stratum, pasture, allotment, or a particular management area. Key areas or monitoring sites should represent the high variability of riparian, upland and forest habitat types, patterns of use, and conditions of forest, rangeland or riparian health. Over the next several years the following data will be collected (See Table 5).

- Actual livestock and wildlife use. Actual use is the grazing use made on an area by all classes of forage consumers. This information is necessary to provide a correlation between utilization and trend data. Considered alone, actual use data are essentially meaningless. However, when considered in conjunction with climate and utilization data, this data is necessary to interpret trend data accurately.
- Annual monitoring/compliance, including utilization of upland forage, browse levels on willows and aspen, measurement of sedge stubble heights and measurement of stream bank alteration, where applicable. This monitoring will occur primarily at established key areas, but may occur in other areas as well. In areas where competition for resources may occur between livestock and big game, pre-livestock data may also be collected. This annual data will be used to help accurately interpret trend data.
- Local precipitation and temperature. This data is necessary to interpret trend data accurately.
- Long term trend. Trend data will be used to measure progress towards meeting objectives as described above.

Trend refers to the direction of change and indicates whether the forest, rangeland, riparian area or other resource is being maintained or is moving toward or away from the desired plant community or other specific management objectives. Trend studies are important in the long term for determining the effectiveness of management actions toward meeting management objectives.

Trend data will be collected again in 2017 unless specified otherwise for specific objectives. The BWW will be re-assessed or evaluated during the winter of 2017/2018. In this process, all monitoring data will be summarized, analyzed, interpreted, and evaluated to measure progress toward meeting objectives. Trend data gathered in 2017 will be compared to baseline and existing trend data. The measured change in the data will be used to measure progress toward

meeting objectives, thereby evaluating management and making informed decisions regarding subsequent management (continuation or change). For example, if monitoring data shows that progress is being made toward established objectives, current management will be continued or modified slightly as warranted or allowed according to the data. However, if data shows a downward trend (change away from objectives) or does not show any progress toward meeting objectives by 2017, and it is determined that current livestock management is a significant factor in precluding progress toward meeting objectives, then management will be adjusted by implementing an alternate system, changing the season of use and/or reducing authorized AUMs. The level of adjustment will be determined by the degree of divergence from the objectives.

Table 5. Planned Resource Monitoring Activities

Type	Method	Responsibility	Frequency
Actual Use	Actual Use Reports submitted by permittees; Wildlife observation forms; Wildlife population monitoring in cooperation with the MFWP. Recreation user days	Range, Wildlife and Recreation Staffs	Annually
Compliance/ Annual Monitoring	Utilization – Grazed/Ungrazed Method; Key Forage Plant method or Height/weight method	Range, Wildlife or Fisheries Biologist, Hydrologist, Recreation Staff, Law Enforcement Officer.	Annually and seasonally, as applicable
	Stubble height – Stubble Height Method		
	Bank alteration – Stream bank Alteration Methodology as defined by Idaho State Office BLM, 2000		
	Browse use – To be determined		
	Compliance checks to monitor and enforce Travel Management Plan		
	Compliance Checks, aerial and ground, in WSAs; photographic documentation. (Wilderness Monitoring Forms).	Recreation Staff	Annually and seasonally, as applicable
Climate	Precipitation data available from National Oceanic and Atmospheric Administration and other sources	Available from external sources	Annually
Habitat Characterization	Sage grouse telemetry study. Herbaceous understory measurements along established transect within nesting and early brood-rearing habitat.	Wildlife Staff	Annually, as resources allow.

Type	Method	Responsibility	Frequency
Trend (also see Tables 1 – 4 above)	**Biotic (vegetative)** *Quadrat Frequency* *Daubenmire* *Line Intercept* *Cover Board* *Woody Species Regeneration* *Greenline* *Macroplots/Belt Transects* *Fire Regime Condition Class (FRCC)* *Satellite Imagery (as applicable)* **Physical** *Cross section* *Rosgens* *Cumulative width/depth ratio transects*	Range, Wildlife or Fisheries Biologist, Botanist, Hydrologist, Forester, Fuels Specialist	Establish baseline by 2009 where needed. Trend data will be duplicated in **2017** and may be duplicated during additional years prior to 2016 as determined by need, priorities and available resources.
Watershed Evaluation	Analysis, Interpretation, Evaluation and Recommendations	ID team	FY2016/2017

Budget Requirements

This monitoring plan was prepared with the assumption that funding will remain at or near existing levels for the foreseeable future. In this light, it is anticipated that the bulk of the monitoring load will have to be borne by the existing range, wildlife, fisheries, forestry, fuels, hydrology, recreation, wilderness and cultural resource specialists along with a minimum of six seasonal employees (technicians) each field season for the duration of this plan.